

# **Part One** *Recertification*

## **Foreword**

This CBT module will discuss both gynecologic and obstetric emergencies. Gynecologic emergencies will focus on patients with either abdominal pain or vaginal bleeding. Obstetric emergencies will address pregnancy, childbirth and complications that the EMT/FR will encounter in the field.

**Andre Christian Mey**

## **Goals**

1. Early recognition
2. Meaningful intervention
3. Safe, rapid transport to the appropriate medical facility

## **Objectives**

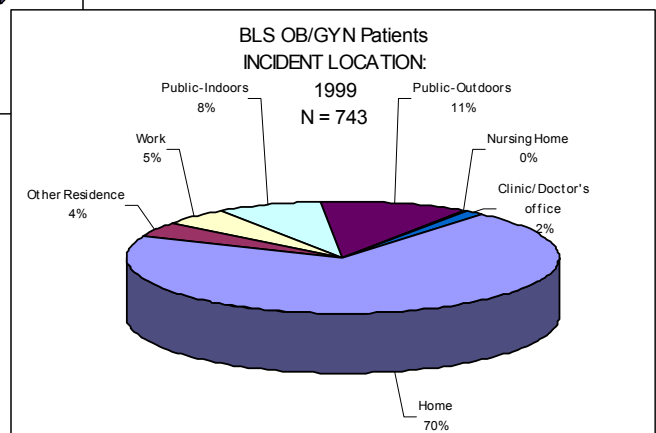
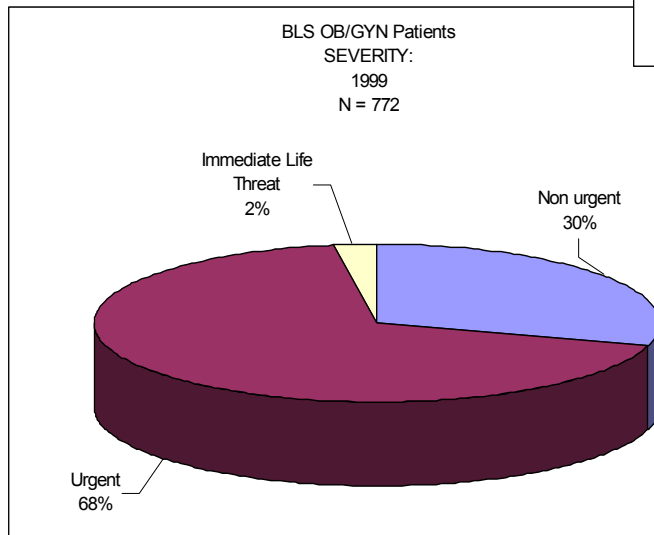
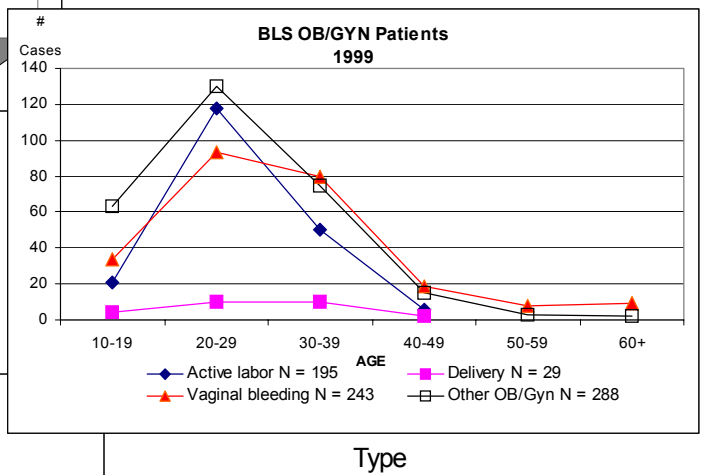
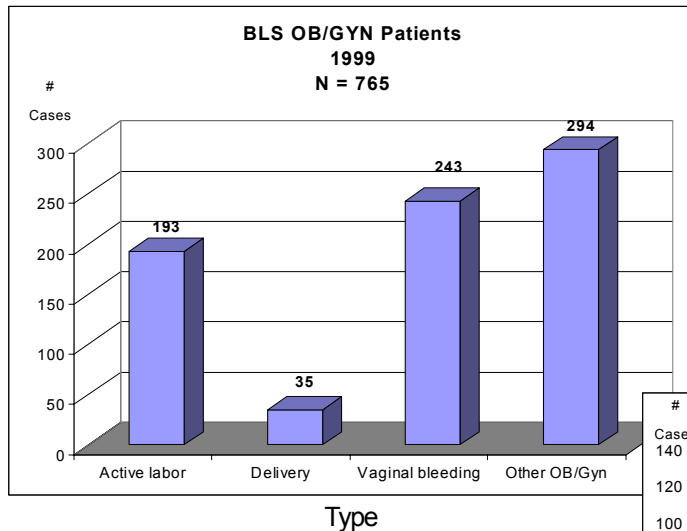
### *Performance Based*

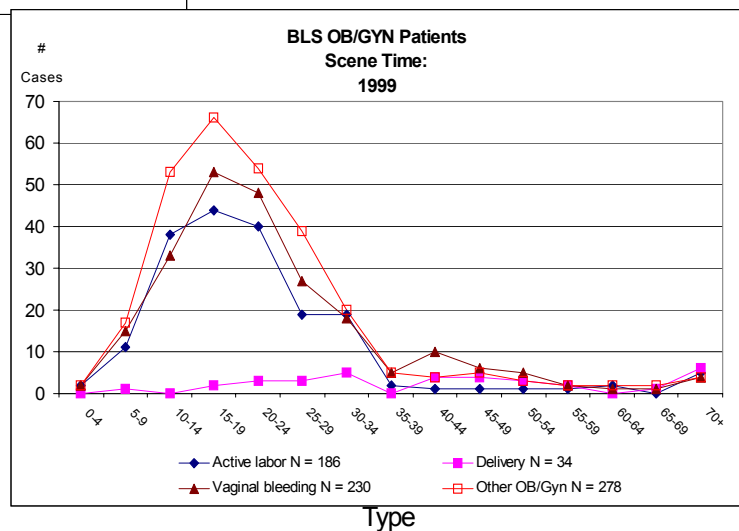
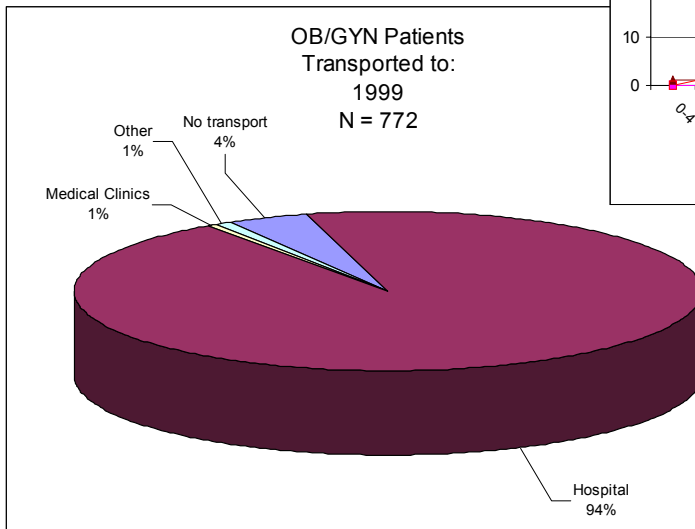
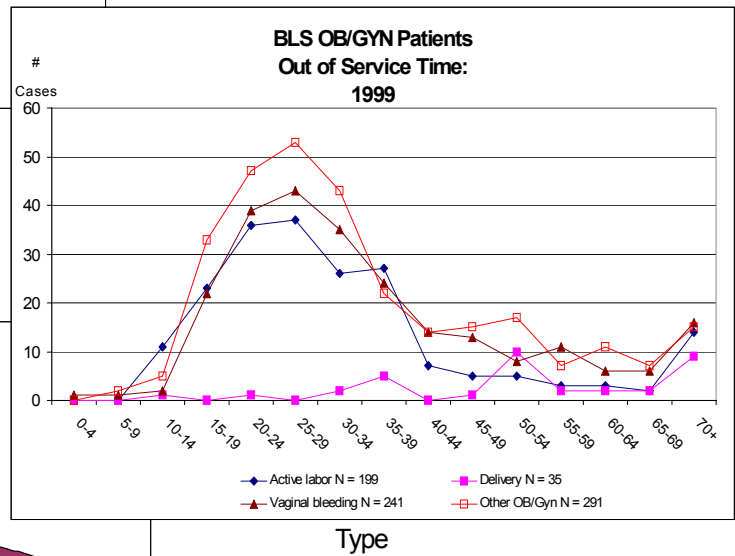
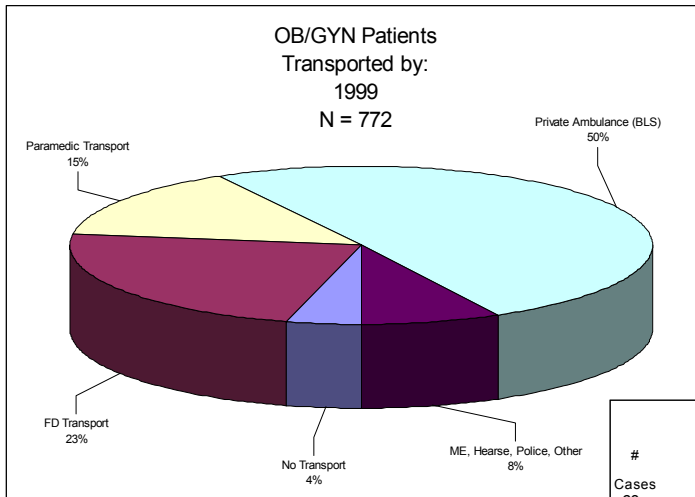
Given a partner, relevant equipment, and a patient with a gynecologic and/or obstetric emergency, the EMT/FR will demonstrate treatment as specifically identified in the King County Emergency Medical Services BLS Patient Care Guidelines.

### *Cognitive Based*

After studying the Competency Based Training (CBT) 521 Gynecologic & Obstetric Emergencies module, the EMT will verify cognitive learning by successfully passing a ten question written test by achieving a minimum score of 70%.

# MIRF Facts





# Medical Terminology

<b>Amniotic Sac</b>	a thin membrane that encloses the fetus within the uterus and acts as a shock absorber. It is commonly called the <i>bag of waters</i> . It is filled with a watery substance called <i>amniotic fluid</i> . It is normal for the amniotic sac to break before delivery, although you may have to break it during delivery when the child's head appears. Normal amniotic fluid is clear.
<b>Abruptio placenta</b>	occurs when the placenta separates from the uterine wall prematurely causing heavy bleeding with pain; may occur as a result of trauma
<b>Bloody Show</b>	mucous and blood that comes out of the vagina as first stage labor begins. The cervix is sealed shut by a plug of mucus during pregnancy to prevent contamination. When the cervix begins to dilate, the plug is expelled as pink-tinged mucous called <b>bloody show</b> , which begins the first stage of labor.
<b>Cervix</b>	the opening of the uterus. During the first stage of birth, the cervix opens and thins to allow the fetus to move into the vagina. This opening process is called <i>dilation</i> . Dilation can occur over a period of several hours in some women. In others it can take as long as a month. Effacement is a term relating to the thinning of the cervix.
<b>Crowning</b>	the bulging out of the vaginal opening as the baby's head presses against it
<b>Dilate</b>	Means to get larger or enlarge. The degree of dilation of the cervix is often a key indicator used by midwives and physicians to determine if birth is imminent. However, EMT/FRs do not perform this test.
<b>Dropped</b>	an expression used when the fetus has moved into the head-down position
<b>Eclampsia</b>	See "toxemia"
<b>Ectopic pregnancy</b>	when the fertilized egg implants outside the uterus, often in the fallopian tubes. Patient will eventually have abdominal pain, may or may not have vaginal bleeding.
<b>Fallopian tubes</b>	hollow tubes that transport the egg from the ovary to the uterus. Fertilization usually occurs in the fallopian tube.



<b>Fertilization</b>	the combination of the female ovum and the male spermatozoa a medical term for the unborn offspring that is developing inside the mother's uterus. This term is used from the second month of pregnancy until birth.
<b>Full term pregnancy</b>	280 days from first day of last menstrual cycle or 40 weeks
<b>Gynecology</b>	the branch of medicine that deals with the female reproductive tract. Most gynecologic emergency patients have either abdominal pain or vaginal bleeding.
<b>Meconium</b>	<p>the dark-green fecal material found in the intestines of full-term babies. Ordinarily, the meconium is passed after the baby is born. In some cases, the meconium is expelled into the amniotic fluid prior to birth. This is known as <i>meconium staining</i>. It gives the fluid a greenish-brown color.</p> <p>Do not stimulate the infant before suctioning the mouth and nose if meconium staining is noted. This is to avoid aspiration of the fecal material, which can cause pneumonia.</p>
<b>Ovaries</b>	are two almond-shaped and sized glands located on each side of the uterus, behind and below the fallopian tubes
<b>Ovulation</b>	the growth and discharge of an egg, or ovum, from the ovary
<b>Placenta</b>	a special, highly vascular organ that develops with the fetus. The placenta is attached to the uterine wall. Through the placenta the fetus receives oxygen and nourishment from the mother and rids itself of carbon dioxide and other waste products. The exchange is made between the mother's blood and the fetus' blood; however, the blood between the mother and fetus never mix. The placenta separates from the wall, after the infant is born, and is referred to as the <b>afterbirth</b> . Delivery of the placenta usually occurs within 15 minutes after the infant is born. In multiple births, each infant may have its own placenta or may share the same.
<b>Placenta Previa</b>	a condition where the placenta sits low in the uterus, blocking the cervix and presenting with painless bleeding. May be an indication for C-section if persists into 3 <sup>rd</sup> trimester.
<b>Postpartum</b>	refers to the condition of the mother after delivery of baby and placenta

<b>Preeclampsia</b>	patients with this condition have hypertension, abnormal weight gain, edema, headache, protein in the urine, epigastric pain, and occasionally, visual disturbances. If untreated, preeclampsia may progress to the next stage, eclampsia.
<b>Prepartum</b>	refers to the condition of the mother prior to delivery
<b>Premature birth</b>	an infant born before the 38 <sup>th</sup> week or one who weighs less than 5 pounds
<b>Supine Hypotensive Syndrome</b>	is when the weight of an unborn fetus and the uterus puts pressure on the inferior vena cava resulting in lowered blood pressure, inadequate venous blood return to the heart and cardiac output reduction. (Patient should either sit or lie on her left side to prevent this).
<b>Toxemia</b>	a serious condition which may develop in the third trimester. It is characterized by high blood pressure and excessive swelling in the extremities and face and may be called pregnancy- induced hypertension. May progress to life-threatening seizures.
<b>Trimester</b>	each 3 month time period of a 9-month pregnancy
<b>Umbilical Cord</b>	the lifeline of the unborn fetus. It attaches the fetus to the placenta. It contains <i>one vein</i> and <i>two arteries</i> . The vessels in the umbilical cord are similar to the pulmonary circulation as the arteries carry deoxygenated blood and the veins carry oxygenated blood. In the newborn the cord is about 2 feet long and ½ inch in diameter.
<b>Uterus</b>	a pear-shaped organ that holds the fetus during pregnancy. It is muscular and contracts to push the fetus through the cervix and into the vagina at birth. Many people use the term <b>womb</b> to refer to the uterus.
<b>Vagina</b>	a flexible, muscular tube about 3 inches long. It is also called the <i>birth canal</i> . The fetus moves from the uterus through the cervix and into the vagina and then out the mother's body.



<i><b><u>Student Notes</u></b></i>	<i><b><u>Instructor Ideas</u></b></i>

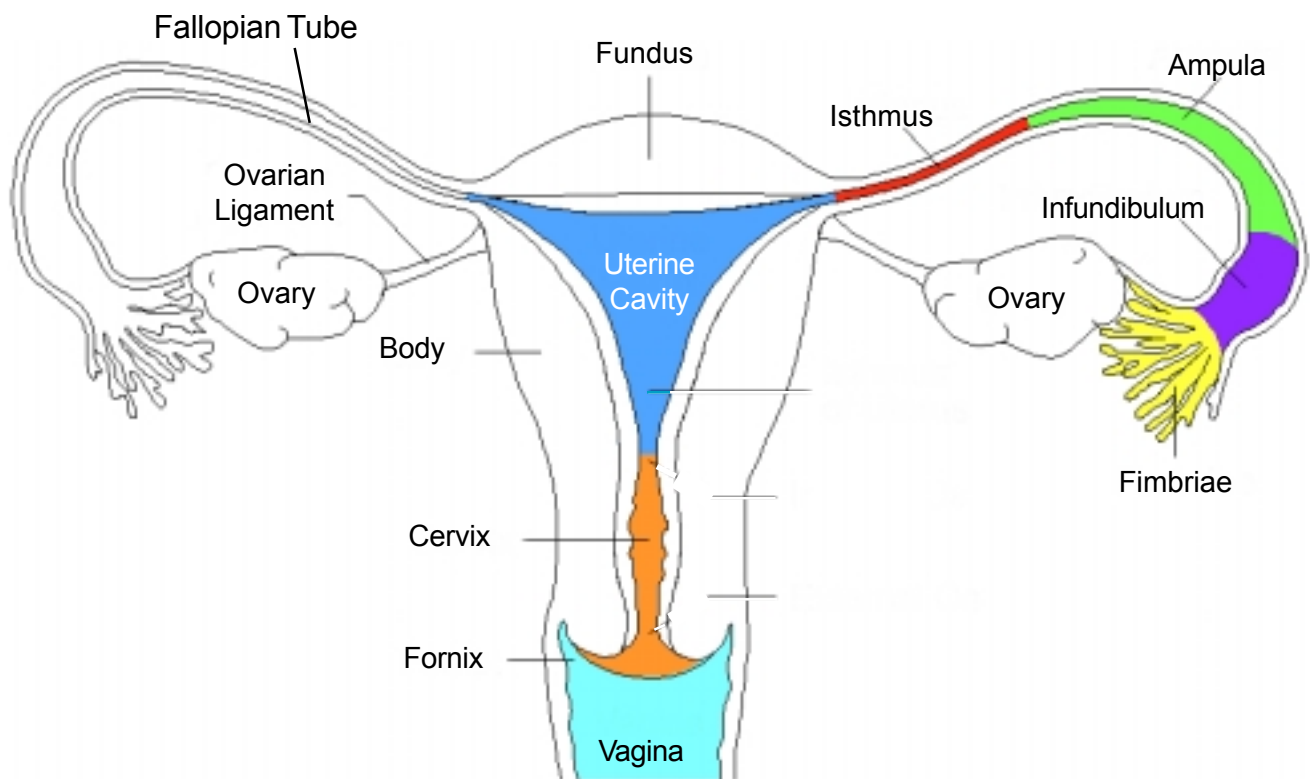
# Gynecology

## Anatomy, Physiology & Etiology

The female reproductive organs are located entirely within the pelvic cavity, close to the urinary bladder. The female reproductive tract consists of the following organs:

- Ovaries
- Fallopian Tubes
- Uterus

The **ovaries** are located at the lateral aspect of the fallopian tubes. Their function is twofold. First, they produce estrogen and progesterone in response to *follicle stimulation hormone* (FSH) and *luteinizing hormone* (LH) secreted from the anterior pituitary gland. Second, they produce eggs for reproduction.



The **fallopian tubes** are hollow tubes that transport the egg from the ovary to the uterus. Fertilization of the egg usually occurs in the fallopian tube.



The **uterus** is a small, pear shaped organ that connects with the vagina. The uterus is the organ in which the developing fetus grows. It stretches from a length of about 5 cm in the nonpregnant state, to a size capable of housing an 8-pound fetus. The upper portion of the uterus is referred to as the *fundus*. The lower portion of the uterus, which extends into the vagina, is referred to as the *cervix*.

The **endometrium** is the lining of the uterus. Each month, under the influence of estrogen and progesterone, the endometrium is built up in anticipation of implantation of a fertilized ovum. If fertilization does not occur, the lining simply sloughs off. This sloughing off of the uterine lining is referred to as the menstrual period.

The **cervix**, or “neck” of the uterus, is visible through the vagina. During labor, the cervix dilates from a closed state to a diameter of approximately 10 cm to allow passage of the baby.

The **vagina** connects the uterus and the outside of the body. It is the female sex organ and receives the penis during intercourse.

The **perineum** refers to the area surrounding the vagina and anus. This area is sometimes torn during childbirth.

The **labia** are the structures that protect the vagina and urethra. There are two distinct sets of labia. The labia majora are located laterally. The labia minora are more medial. Both sets of labia are subject to injury during trauma to the perineal area, such as occurs with rape.

The urinary bladder drains through the **urethra**, which is located superior to and anterior to the vagina. The urethra is 2-3 cm long. Because the female urethra is so short, the female is more susceptible to bladder infections than the male, since the distance bacteria must travel to cause infection is much less.

## **Gynecologic Emergencies**

Gynecologic emergencies involve the female reproductive tract. Most gynecologic emergency patients have either abdominal pain or vaginal bleeding. This part of CBT 521 (part one) will discuss the nonpregnant patient, and part two will address the pregnant patient (Obstetric Emergencies).

### ***1. The Menstrual Cycle***

The female undergoes a monthly hormonal cycle that prepares the uterus to receive a fertilized egg. A girl's menstrual periods usually begin when she is between 12 and 14 years old. The menstrual cycle is influenced by estrogen and progesterone, which are produced by the ovaries. In turn, secretion of estrogen and progesterone is controlled by secretion of *follicle stimulation hormone* (FSH) and *luteinizing hormone* (LH) from the anterior pituitary gland.

The average menstrual cycle lasts approximately 28 days, although the length varies from one woman to another. Day 1 of the menstrual cycle is the day bleeding begins. The menstrual flow (bleeding) usually lasts from 3 to 5 days, and varies among women. The first two weeks of the menstrual cycle are dominated by estrogen. Estrogen causes the lining of the uterus to thicken and to become engorged with blood vessels. This is referred to as the *proliferative phase*. At approximately day 14, a sudden surge of LH secretion causes the ovary to release an egg, which matured over the first two weeks of the menstrual cycle. Release of an egg from the ovary is called *ovulation*. The egg is grasped by fine, hair like structures in the end of the fallopian tube. These structures sweep the egg towards the uterus. If the woman has had sexual intercourse within approximately 24 hours of ovulation, fertilization may take place. If the egg is fertilized, it normally implants in the thickened lining of the uterus where the fetus subsequently develops. The stage of the menstrual cycle immediately surrounding ovulation is referred to as the *secretory phase*.

If the egg is not fertilized, as normally happens, the woman's estrogen level falls and her uterine lining sloughs away, starting a new menstrual cycle. The interval immediately preceding and including the menstrual period is referred to as the *menstrual phase*. The absence of a menstrual period, especially in a woman whose periods are usually regular and who is sexually active, should raise the possibility of pregnancy.

### Menopause

Menstrual periods continue to occur until a woman is in her forties or fifties. At that time, they begin to decline in frequency and length until they ultimately stop. This stoppage of the menstrual cycle is referred to as menopause. Occasionally, physicians use the term *surgical menopause*, which means that a woman's periods have stopped because of surgical removal of her uterus, ovaries, or both.

### Mittelschmerz

Occasionally, a woman has a day or two of abdominal pain halfway through her menstrual cycle. The pain, referred to as Mittelschmerz, is associated with the release of the egg from the ovary. The pain is usually self-limited, and treatment is symptomatic.

## **2. Pelvic Inflammatory Diseases**

Pelvic inflammatory disease is an infection of the female reproductive tract. The organs most commonly involved are the uterus, fallopian tubes, and ovaries. Occasionally, the adjoining structures, such as the peritoneum and intestines, also become involved. The most common cause of PID is gonorrhea and chlamydial infections. In addition, other bacteria, such as staph or strep, can be causative agents. Commonly, gonorrhea or chlamydia progress undetected in a female until obvious PID manifests itself.

PID may be either acute or chronic, and if it is allowed to progress untreated, sepsis may develop. In addition, PID may cause the pelvic organs to "stick together," causing adhesions. Adhesions are a common cause of chronic pelvic pain and cause an increase in the frequency of ectopic pregnancies.



### 3. Vaginal Bleeding

Vaginal bleeding that is not a result of direct trauma or a woman's normal menstrual cycle may indicate a serious gynecologic condition. Since it will be difficult for you to determine a specific cause of the bleeding, it is important that all women who have vaginal bleeding be treated as though they have a potentially serious condition. This is especially true if the bleeding is associated with abdominal pain. Common causes of vaginal bleeding in the female patient include cancer and benign tumors.

#### Sexual Assault

Sexual assault is one of the fastest growing crimes in the United States. Unfortunately, it is estimated that more than 60% of all sexual assaults are never reported to authorities. Sexual abuse of children is reported even less frequently. Sexual assault is sexual contact without the consent of the person assaulted. Definitions may vary from state to state, but as a rule, *rape*, is defined as penetration of the vagina of an unwilling female by a male, or of the rectum in a male. Regardless of the legal definition, sexual assault is a crime of violence with serious physical and psychological implications. Trauma to a woman's external genitalia can be difficult to care for because of the patient's modesty and the severe pain often associated with such injuries. Injuries in this area tend to bleed profusely because of its rich blood supply.

### 4. Ovarian Cysts

Cysts are fluid-filled pockets. When they develop in the ovary, they can rupture and be a source of abdominal pain. When an egg is released from the ovary, a cyst is often left in its place. Occasionally cysts develop independent of ovulation.

### 5. Cystitis

Bladder infection, or cystitis, is a common cause of abdominal pain. The bladder lies anterior to the reproductive organs, and causes pain when inflamed.

<u><i>Student Notes</i></u>	<u><i>Instructor Ideas</i></u>

# Subjective

## History

### A SYSTEMATIC APPROACH TO PATIENT CARE

Establishing an accurate history begins at the moment you and your partner arrive at the scene and begin to observe the surroundings. Before asking questions, look at the patient and consider whether the patient looks “sick” or for that matter “not sick.” If the patient looks sick consider requesting medic evaluation and begin treatment while waiting for arrival of the medics.

Always identify yourself and the agency you represent. Once you have established some rapport with the patient, find out the chief complaint. Remember that patients with gynecology complications may be embarrassed or frightened about discussing these problems. Assess the patient’s emotional state. If she does not feel comfortable about discussing her complaint, respect her wishes and transport her to the appropriate emergency department.

The two most common chief complaints in gynecologic emergencies are:

- ***Vaginal Bleeding***
- ***Lower Abdominal or Pelvic Pain***

#### **In Bleeding**

How much

When

Likelihood of pregnancy

Menstrual cycle

Associated with pain and other functions

Are there other medical problems

Obstetric history (number pregnancies, deliveries or miscarriages)

#### **In Pain**

Location/radiation

Character

Duration/timing

Relationships

OPQRST



*Subjective continued*

### ASSESSMENT OF THE VICTIM OF SEXUAL ASSAULT

There is no reason to interview victims of sexual assault. It is not important for the EMT/FR to determine whether penetration took place. Avoid asking questions about the patient's sexual practices. Victims of sexual assault are often withdrawn and/or hysterical. Some victims may display:

- **Denial**
- **Anger**
- **Fear**
- **Silence**

Approach the victim calmly and professionally. Respect the patient's privacy, and cover the victim that is undressed. Explain all procedures before, during and after. It is not necessary to touch the patient other than to measure the vital signs or examine other physical injuries.

**Special Note:** Do not examine the genitalia unless there is life-threatening hemorrhage.

**Student Notes**

**Instructor Ideas**


# Objective

## Physical Exam

Limit the physical exam in the field to record the following vital signs:

- Level of consciousness (disposition)
- Respirations
- Pulse
- Blood Pressure
- Level of Pain
- Skin Color, temperature, and turgor
- Pupil reaction

### In Bleeding

- **External** observation of blood
- **Excessive** bleeding is present check for signs of shock
- **Monitor** blood pressure and heart rate

### In Pain

It may be necessary to inspect the patient's perineum. Document the character of the discharge, including color, amount, and the presence or absence of clots.

- **Masses** (above the umbilicus usually indicative of third trimester pregnancy)
- **Distention**
- **Guarding**
- **Tenderness**

**Special Note:** EMT/FRs never perform internal vaginal exams.

### Student Notes

### Instructor Ideas



<h1 style="margin: 0;">Assessment</h1>	<p style="text-align: center; font-size: 1.2em;">Impression</p>
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**ALS Indicators (Sick)**

- Decreased/altered level of consciousness
- BP < 90 systolic
- Pelvic pain with high likelihood of unstable condition during BLS transport
- Excessive vaginal bleeding
- Limited vaginal bleeding with stable vital signs
- Pelvic pain or discomfort with normal vital signs

**BLS Indicators (Not Sick)**

- Limited vaginal bleeding with stable vital signs
- Pelvic pain or discomfort with stable vital signs

***Special Note: Determine type of “gynecologic emergency” and formulate treatment plan based on history and physical exam. Always consider need for ALS intervention.***

<u><b>Student Notes</b></u>	<u><b>Instructor Ideas</b></u>

<h1>Plan</h1>	Treatment
<b>A SYSTEMATIC APPROACH TO PATIENT CARE</b>	
<ul style="list-style-type: none"> <li>Request Medics if necessary, and provide short radio report</li> <li>Reassure and provide emotional support</li> <li>Monitor vital signs</li> <li>Direct pressure over lacerations</li> <li>Oxygen therapy as appropriate</li> <li>Nothing by mouth</li> <li>Allow patient to choose position of comfort</li> <li>Consider police notification of sexual assault incidents</li> </ul>	
<b>Special Note: Do not pack vagina with any materials or dressings.</b>	
<p>(Scenarios for Gynecologic Emergencies can be found on FireMedNet)</p>	
<u><b>Student Notes</b></u>	<u><b>Instructor Ideas</b></u>



# Obstetrics

## Anatomy, Physiology & Etiology

In this second part of CBT 521, we will address pregnancy and childbirth and associated complications. It is important to remember that childbirth is a natural process and occurs daily. Complications are uncommon, but when they do occur, they must be recognized early and managed appropriately.

Pregnancy begins with **ovulation** in the female. Fourteen days before the beginning of the next menstrual period, the ovum is released from the ovary into the abdominal cavity. It then enters the wide opening of the fallopian tube, where it is transported to the uterus. If the woman has had intercourse within 24 to 48 hours before ovulation, **fertilization** may occur in the fallopian tube. Once fertilized, the ovum begins to divide immediately. The fertilized ovum continues down the fallopian tube to the uterus, where it attaches itself to the inner lining of the uterus. This process is called **implantation**.

The **placenta** develops early in pregnancy. The placenta performs several important functions for the developing fetus. It provides for the exchange of respiratory gases, transport of nutrients from the mother to the fetus, excretion of wastes and transfer of heat. The placenta also becomes an active endocrine gland, producing several important hormones. The placenta is attached directly to the uterine wall and to the developing fetus via the umbilical cord. This cord normally contains two arteries and one vein. The umbilical vein transports oxygenated blood toward the fetus, while the umbilical arteries return relatively deoxygenated blood to the placenta.

The **amniotic sac** also develops early in pregnancy. The amniotic sac consists of membranes that surround and protect the developing fetus throughout intrauterine development. Eventually, the amniotic sac will fill with amniotic fluid, which cushions the fetus against trauma and provides a stable environment in which the fetus can develop. The volume of amniotic fluid, approximately 1000 mL, is maintained by the fetus's continual swallowing of fluid as well as continual urination.

**Fetal development** begins immediately after implantation and is quite complex. There are a few developmental milestones EMT/FRs should be aware of. First, the normal duration of pregnancy is 40 weeks or 9 months from the first day of the mother's last menstrual period.

The time at which fertilization occurs is called **conception**. Conception occurs approximately 14 days after the first day of the last menstrual period. With this knowledge, it is possible to estimate, with fair accuracy, the baby's approximate birth date. This date is commonly called the due date. The mother is usually told this date on her first prenatal visit.

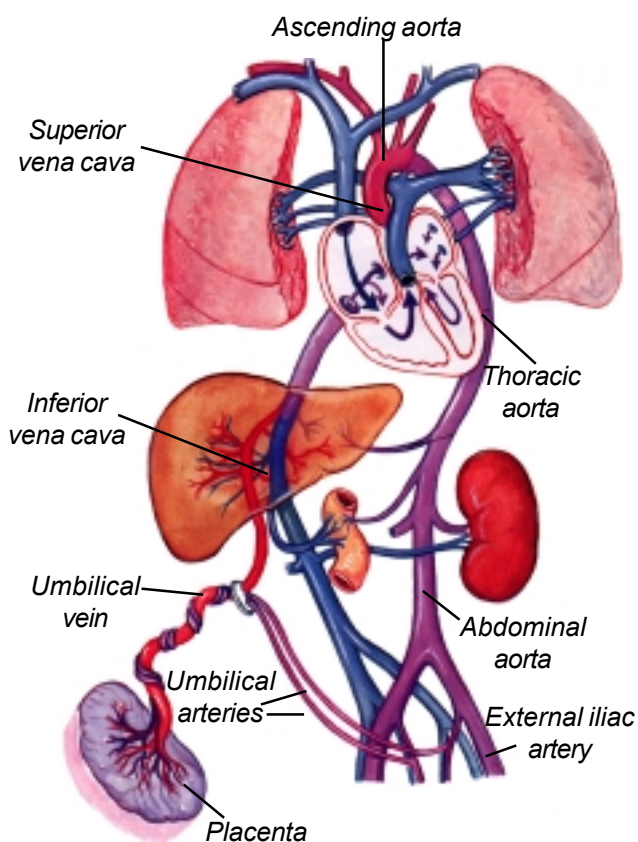
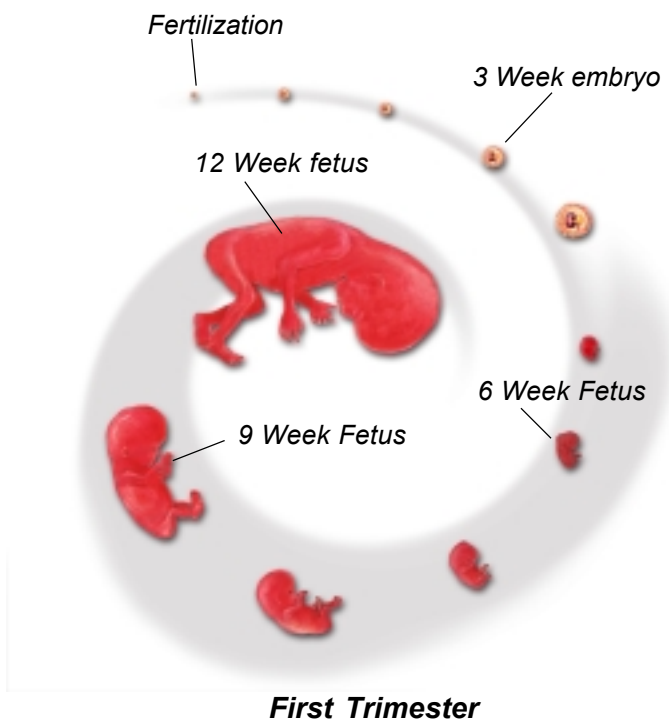
The sex of the infant can usually be determined by the end of the third month. By the end of the fifth month, fetal heart tones can be detected by stethoscope, and the mother generally has felt fetal movement. By the end of the sixth month, the baby may be capable of surviving on its own, if born prematurely. Fetuses born after the seventh month have an excellent chance of survival. By the *middle* of the tenth month the baby is considered **term**, or fully developed.

Pregnancy is divided into three **trimesters**. Each trimester is approximately 13 weeks, or three months. Most of the fetus's organ systems develop during the first trimester. Therefore, this is when the fetus is most vulnerable to the development of birth defects.

### ***Fetal circulation***

The fetus receives oxygen and nutrients through the placenta. Thus, while in the uterus, the fetus does not need to use its respiratory system or its gastrointestinal tract. Because of this, the fetal circulation shunts blood around the lungs and gastrointestinal tract. The infant receives its blood from the placenta by means of the umbilical vein.

The umbilical vein connects directly to the inferior vena cava by a specialized structure called the ductus venosus. Blood then travels through the inferior vena cava to the heart. The blood enters the right atrium and passes through the tricuspid valve into the right ventricle. It then exits the right ventricle, through the pulmonic valve, into the pulmonary artery. The fetus's heart has a hole between the right and left atria, termed the foramen ovale, which allows mixing of the oxygenated blood in the right atrium with that leaving the left ventricle bound for the aorta.



At this time the blood is still oxygenated. Once in the pulmonary artery, the blood enters the ductus arteriosus, which connects the pulmonary artery with the aorta.

The ductus arteriosus causes blood to bypass the lungs. Once in the aorta, blood flow is basically the same as in extrauterine life. Deoxygenated blood containing waste products exits the fetus, after passage through the liver, via the umbilical arteries.

The fetal circulation changes immediately at birth. As soon as the baby takes his or her first breath the ambient pressure in the lungs decreases dramatically. Because of this pressure change, the ductus arteriosus close, diverting blood to the lungs. In addition, the ductus venosus closes, stopping blood flow from the placenta. The foramen ovale also closes as a result of pressure changes in the heart, which stops blood flow from the right to the left.

## **Complications of Pregnancy**

### ***1. Trauma***

Pregnant victims of major trauma are more susceptible to life threatening injury than nonpregnant victims because of the increased vascularity of the gravid uterus. Generally, the amniotic fluid cushions the fetus from blunt trauma fairly well. However, in direct abdominal trauma, the pregnant patient may suffer premature separation of the placenta from the uterine wall, premature labor, abortion, uterine rupture, and possibly fetal death. Fetal death may result from death of the mother, separation of the placenta from the uterine wall, maternal shock, uterine rupture, or fetal head injury. Any pregnant patient who has suffered trauma should be transported to the emergency department

### ***2. Medical***

The pregnant patient is subject to medical problems that occur in the nonpregnant state. Abdominal pain is a common complaint. It is often caused by the stretching of the ligaments that support the uterus. In pregnancy the abdominal organs are displaced because of the increased mass in the abdomen of the gravid uterus. A physician should evaluate any pregnant patient with abdominal pain. It is important that the you realize that pregnancy aggravates many medical conditions.

### ***3. Diabetes Mellitus***

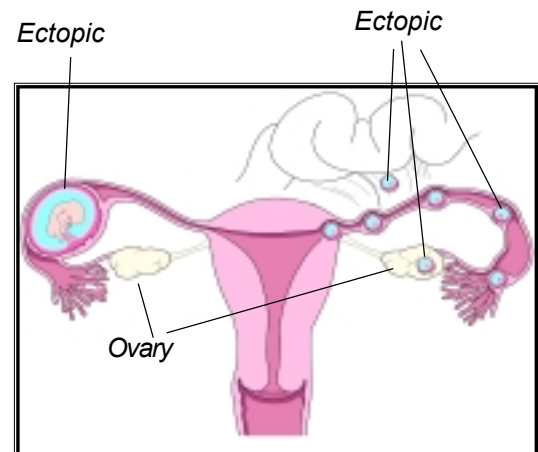
Previously diagnosed diabetes can become unstable during pregnancy. Sometimes patients develop diabetes during pregnancy (gestational diabetes). Gestational diabetes cannot be managed with oral drugs, since these tend to cross the placenta and affect the fetus. Therefore, all pregnant diabetics are placed on insulin if their blood sugar levels cannot be controlled by diet alone.

### ***4. Congestive Heart Failure***

During pregnancy, cardiac output increases up to 30 percent. Patients who have preexisting heart conditions may develop congestive heart failure. Watch for signs and symptoms that suggest that the patient is in heart failure (respiratory distress and hypertension), and inquire about preexisting heart conditions.

## 5. Ectopic Pregnancy

Many different problems with the female reproductive systems can cause abdominal pain. One life threatening condition is ectopic pregnancy. *Ectopic pregnancy* is the implantation of a growing fetus in a place where it does not belong. The most common site is within the fallopian tubes. This is a surgical emergency because the tube can rupture and massive hemorrhage can occur. Patients with ectopic pregnancy often have one-sided abdominal pain, a late or missed menstrual period and occasionally vaginal bleeding.



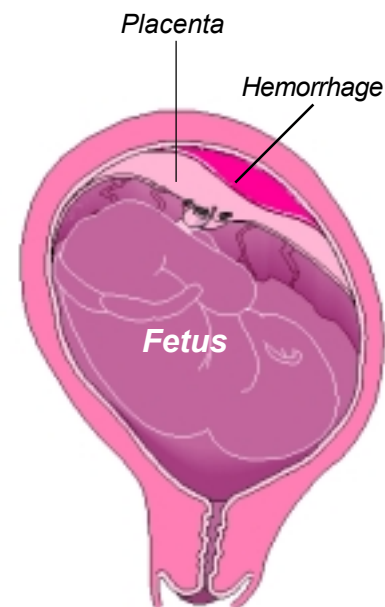
**Ectopic Pregnancy**

## 6. Vaginal and Third Trimester Bleeding

Vaginal bleeding during pregnancy is always a cause for concern. Bleeding in early pregnancy is often caused by spontaneous abortion, ectopic pregnancy, or vaginal trauma. Bleeding in the third trimester is usually caused by abruptio placenta, placenta previa, or trauma to the vagina or cervix. Bleeding can range from simple spotting to life threatening hemorrhage. Generally, the exact etiology of vaginal bleeding during pregnancy is nearly impossible to determine in the field.

Third trimester bleeding should be attributed to placenta previa or abruptio placenta until proven otherwise, although it can be caused by injury to the vagina or cervix. Abruptio placenta and placenta previa are emergencies that threaten both the mother and fetus.

*Abruptio Placenta* is the premature separation of the placenta from the wall of the uterus. Separation can either be partial or complete. Complete separation usually results in death of the fetus. Several factors may predispose a patient to abruptio placenta. These include pre-eclampsia, maternal hypertension, multiparity, abdominal trauma, or extremely short umbilical cord. When abruptio placenta occurs, blood tends to collect behind the separating placenta. As a result, vaginal blood loss is minimal. If the placenta is not completely separated, it may apply pressure on the bleeding uterine wall. If the placenta separates completely, this pressure is lost and severe hemorrhage can occur quite suddenly.

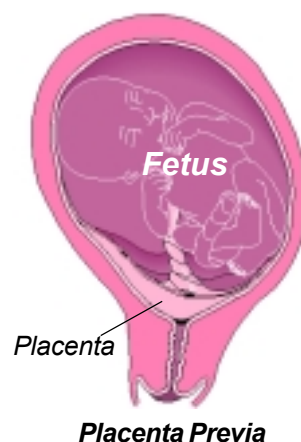


**Abruptio Placenta**



**Placenta Previa** is the attachment of the placenta very low in the uterus so that it partially or completely covers the internal cervix or opening. Implantation of the placenta occurs early in pregnancy. Unless a sonogram is done, placenta previa is usually not detected until the third trimester.

When the fetal pressure on the placenta increases, or uterine contractions begin, the cervix thins out, resulting in placental bleeding.



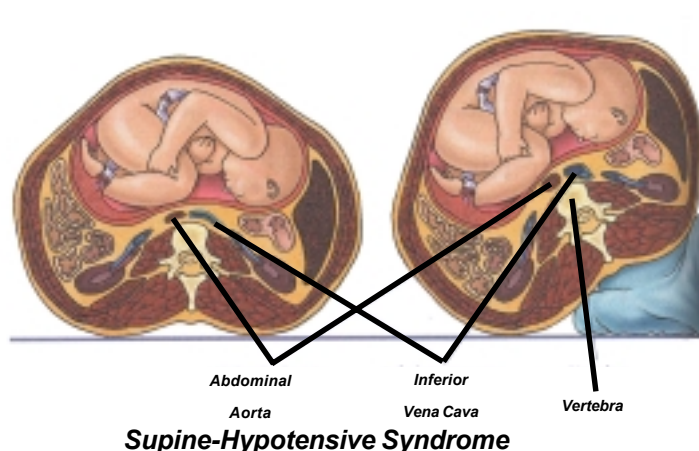
## 7. Hypertension Disorders

Generally, blood pressure is lower in pregnancy than in the nonpregnant state. However, women who were borderline hypertensive before becoming pregnant may become dangerously hypertensive when pregnant. One of the dilemmas that hypertensive pregnant patients face is that many of the common blood pressure medications cannot be used during pregnancy in order to protect the developing fetus. Persistent hypertension may adversely affect the placenta, thus compromising the fetus as well as placing the mother at increased risk for stroke or renal failure. In addition, preeclampsia may contribute to maternal hypertension. Hypertensive disorders of pregnancy occur in approximately five percent of pregnancies. One school of thought is that they are caused by abnormal vasospasms in the mother, which result in increased blood pressure and other associated symptoms. **Preeclampsia** patients have hypertension, abnormal weight gain, edema, headache, protein in the urine, epigastric pain, and occasionally, visual disturbances. If untreated, preeclampsia may progress to the next stage, eclampsia.

**Eclampsia** is the most serious manifestation of hypertensive disorders of pregnancy and is characterized by grand mal seizure activity. Eclampsia is often preceded by visual disturbances, such as flashing lights or spots before the eyes. In addition the development of epigastric pain or pain in the right upper abdominal quadrant often indicates impending seizure. Patients who become eclamptic are often edematous and have markedly elevated blood pressure. If eclampsia develops, death of the mother and the fetus frequently results.

## 8. Supine-Hypotensive Syndrome

Supine-hypotensive syndrome usually occurs in the third trimester of pregnancy. The increased weight of the uterus compresses the inferior vena cava when the patient is supine, markedly decreasing blood return to the heart and reducing cardiac output. Some patients are predisposed to this problem because of an overall decrease in circulating blood volume or anemia. By placing the mother in a left lateral recumbent position, the pressure is relieved; blood return and cardiac output normalizes.



### 9. Braxton-Hicks Contractions (False Labor)

Labor consists of uterine contractions that open the cervix. The contractions of labor are firm, fairly regular and quite painful. Braxton-Hicks contractions, occasionally called “false labor”, are generally less intense than labor contractions and do not change the cervix. It is not possible to distinguish between false labor and true labor in the field. Therefore, all patients with uterine contractions should be transported to the hospital for further evaluation. There is no treatment in the field for false labor pains other than reassurance.

## Childbirth

### 1. Normal Delivery (unexpected field deliveries)

Childbirth generally occurs in a hospital or similar facility with appropriate trained staff and equipment. Occasionally, you may be called upon to attend a delivery. Therefore, you should be familiar with the birth process and some of the common complications associated with childbirth.

The uterus and cervix must undergo several changes to facilitate delivery of the fetus. First, the cervix must efface. Effacement is the thinning and shortening of the cervix. Early in pregnancy the cervix is quite thick and long, but after complete effacement it is paper-thin.

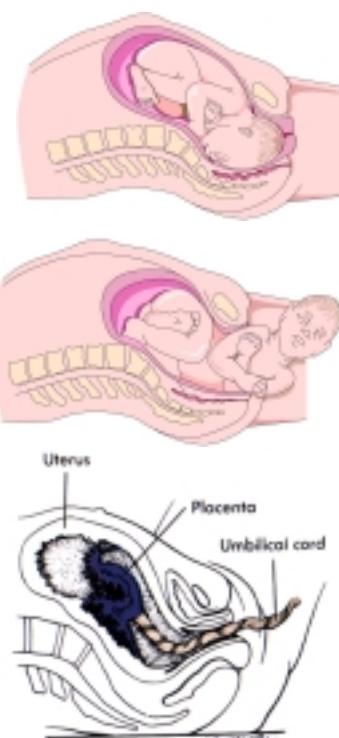
Effacement usually begins several days before active labor ensues. Second, the cervix must dilate. Dilation is the progressive stretching of the opening of the cervix. The cervix dilates from its closed position to 10 cm, which is considered complete dilation. When dilation and effacement are complete, the baby's head moves down into the vagina. Late in the second stage of labor, the head can be seen at the opening of the vagina during a contraction. This is termed *crowning*. The part of the baby that is born first is termed the *presenting part*. In the majority of cases, this is the head. Occasionally, the buttocks or other parts present first. In the field, the presenting part cannot usually be determined until crowning has occurred.

### Labor is divided into three stages:

**First Stage:** The first stage begins with the onset of uterine contractions and ends with complete dilation of the cervix. It usually lasts between five to eight hours. Contractions are irregular at first. Later they increase in intensity and the intervals become shorter.

**Second Stage:** The second stage of labor begins with the complete dilation of the cervix and ends with the delivery of the fetus. Contractions are strong, and each one may last two to three minutes. Often, the patient feels pain in her lower back as the fetus descends into the pelvis. The urge to push or “bear down” usually begins in the second stage. The membranes usually rupture at this time, if they have not ruptured previously.

**Third Stage:** The third stage of labor begins with the delivery of the fetus and ends with the delivery of the placenta. Delivery of the placenta usually occurs within thirty minutes after birth.



# Subjective

## History

### A SYSTEMATIC APPROACH TO PATIENT CARE

Labor is usually painful. The pain begins in the abdomen. Later, as the fetus moves farther down into the pelvis, the pain may extend to the back. The total length of labor averages about 6 to 12 hours, differing from patient to patient. Labor usually lasts longer in the nulliparous (first delivery) patient than in the multiparous (more than one delivery) patient.

#### **Unexpected field delivery**

One of the most important decisions EMT/FRs must make in the field with patients in labor is whether to attempt to assist with the delivery at the scene or transport the patient to hospital. There are several factors that need to be taken into consideration when making this decision. They include:

- Labor pains
- Number of previous pregnancies
- Length of labor during previous pregnancies
- Frequency of contractions
- Ruptured membranes (water broken)
- The maternal urge to push
- Feelings similar to that of a bowel movement
- Presence of crowning

The maternal urge to push or the presence of crowning indicates birth is imminent and the baby should be delivered at the scene or in the aid car.

#### **Student Notes**

#### **Instructor Ideas**


*History continued*

However, certain factors should prompt immediate transport to the hospital.

These include:

- Extreme vaginal bleeding (three pads in one hour)
- Abnormal presentations
- Evidence of fetal distress (meconium in the amniotic fluid)

The two most common chief complaints in obstetric emergencies are:

- ***Vaginal Bleeding***
- ***Lower Abdominal or Pelvic Pain***

**In Bleeding**

*Establish likelihood of pregnancy ("bag of waters" broken)*

How much

When

Menstrual cycle

Associated with pain and other functions

Are there other medical problems

Obstetric history (number pregnancies, deliveries or miscarriages)

**In Pain**

*Establish likelihood of pregnancy (water broken)*

Location/radiation

Character

Duration/timing

Relationships

OPQRST?

**Student Notes****Instructor Ideas**




# Objective

## Physical Exam

*Whenever you suspect that birth is imminent (based on the patient's chief complaint and history), begin making preparation for delivery.*

*Monitor the vital signs:*

- Level of consciousness (disposition)
- Respirations
- Pulse
- Blood Pressure
- Level of Pain (now considered the 5th vital sign)
- Skin Color, temperature, and turgor

### **In Bleeding**

- **External** observation of blood
- **Excessive** bleeding is present check for signs of shock
- **Monitor** blood pressure and heart rate

If significant bleeding is reported and seen, it may be necessary to inspect the patient's perineum. Document the character of the discharge including color, amount, and the presence or absence of clots.

***Special Note: EMT/FRs should never perform internal vaginal exams.***

### **In Pain**

- **Masses** (above the umbilicus usually indicative of 3rd trimester pregnancy)
- **Distention**
- **Guarding**
- **Tenderness**

### **In Delivery**

- **Establish interval and timing of contractions**
- **Observe for crowning**

<b>Assessment</b>	<b>Impression</b>
<p><b><u>ALS Indicators in pregnant patients (Sick)</u></b></p> <ul style="list-style-type: none"><li>• Imminent birth or recent birth</li><li>• Decreased/alterd level of consciousness of mother/newborn baby</li><li>• BP &lt; 90 systolic, &gt; 140 systolic</li><li>• Pelvic pain, vaginal bleeding 3<sup>rd</sup> trimester</li><li>• History of complications (deliveries)</li><li>• Multiple births</li><li>• Breach presentation</li><li>• Prolapsed cord</li><li>• Shoulder distocia</li><li>• Post partum hemmorrhage</li></ul> <p><b><u>BLS Indicators (Not Sick)</u></b></p> <ul style="list-style-type: none"><li>• Early pregnancy, pain or bleeding with stable vital signs</li></ul> <p><b><i>Special Note: Delivery and recent delivery are ALS indicators</i></b></p>	



# Plan

## Treatment

### Management

- Request medics and deliver short radio report
- Reassurance and emotional support
- Monitor vital signs
- Oxygen therapy according to patient's needs
- Nothing by mouth
- Allow patient to choose position of comfort/or tipped to left side for transport

**See Appendix for Treatment & Destination Decisions at the end of this module**

### Apgar Scale: Infant Response Summary

APGAR Scale	Score				
Sign	0	1	2	1 Min	5 Min
<b>APPEARANCE</b> (Color of skin nailbeds or lips)	blue extremities/pale body	blue extremities/pink body	Pink body completely normal		
<b>PULSE</b> (heart rate, take for at least 30 sec)	absent	<100	>100		
<b>GRIMACE</b> (reflex irritability)	no response	grimace	cries		
<b>ACTIVITY</b> (muscle tone)	limp	some flexion of ext.	active motion		
<b>RESPIRATIONS</b> (breathing rate)	absent	slow and irregular	strong crying		
					<b>Total Score</b>

**Measure with APGAR scale and document results along with birth time**

Plan Continued

## IMMINENT DELIVERY (*SPECIFIC INSTRUCTIONS*)

- 1 Communicate intentions to mother
- 2 Prepare delivery area (out of public view)
- 3 Position mother on her back
- 4 Encourage mother to breath deeply *between* contractions & push *with* contractions
- 5 Prepare OB equipment and don sterile gloves
- 6 As baby crowns, support with gentle pressure (to avoid explosive birth)
- 7 If membrane is still intact, rupture with your fingers to allow amniotic fluid to leak out
- 8 If cord is around the baby's neck, gently slip it over the head. Do not force it!
- 9 If the cord is too tight to slip over the head, apply umbilical cord clamps and cut
- 10 As soon as baby's head appears, suction the mouth and nose with bulb syringe
- 11 Allow the mother to push and support the baby's head as it rotates

**Caution, babies are slippery!**

- 12 Clamp the cord by placing the first clamp approximately 4 inches (10 cm) from the baby. Place the second clamp approximately 2 inches (5 cm) above the first clamp, then cut the umbilical cord between the clamps
- 13 Suction baby's nose and mouth again
- 14 Inspect the cord for bleeding
- 15 Dry and wrap baby in warm blanket (cover head)
- 16 Place baby on its side to facilitate drainage
- 17 Inform the mother of the baby's gender
- 18 Note the time of birth
- 19 APGAR assessment @ 1 minute & 5 minutes post delivery

### **Post Delivery**

The mother's vagina will ooze blood. **Do not pull on the umbilical cord.** Eventually, the placenta will deliver. Transport the placenta with the mother and baby to hospital. Massage the uterine fundus. Monitor vital signs, keep the mother and baby warm and transport to the hospital.

<u><b>Student Notes</b></u>	<u><b>Instructor Ideas</b></u>

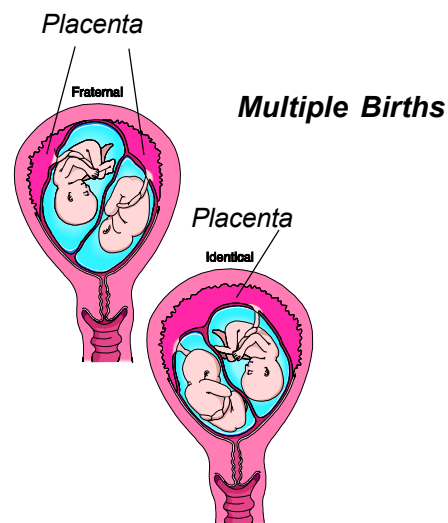


## Complications of Childbirth

### 2. Multiple Deliveries

Multiple births are fairly rare. Usually, the mother knows or at least suspects the presence of more than one fetus. Multiple births should also be suspected if the mother's abdomen remains large after the delivery of one baby. In twin births, labor often begins earlier than expected, and the infants are generally smaller than babies born singly. Usually, one twin presents *vertex* (head first) and the other breech. There may be one or two placentas. After delivery of the first baby, clamp and cut the cord. Then assist the mother in the delivery of the second baby.

**Treatment plan same as normal delivery**

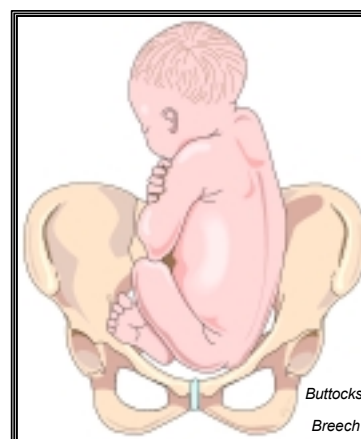
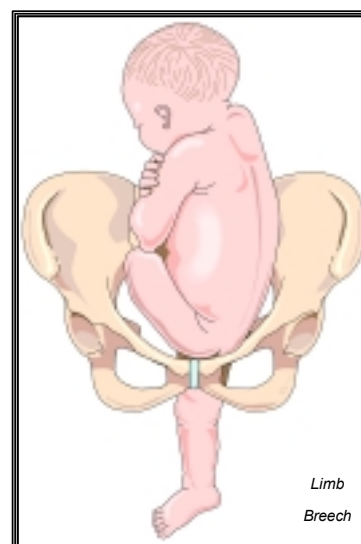


### 3. Breech Presentation

Most babies present head first. However, approximately three percent of deliveries are breech presentations, in which the presenting part is the feet or buttocks. Breech presentations are more common in premature infants and in mothers with uterine abnormalities. Such deliveries carry an increased risk for fetal trauma, anoxia, and prolapsed cord. Delivery of the breech presentation is best accomplished at the hospital, and cesarean section is usually required. However, if field delivery is unavoidable, then the following procedures should be followed:

#### Treatment plan:

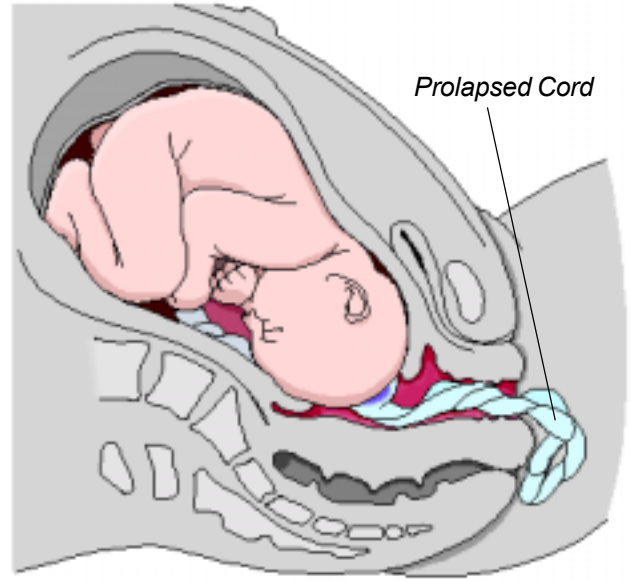
- Request medics
- Position Pt. with her buttocks at the edge of a firm bed
- Have her hold her legs in a flexed position
- When infant delivers, do not pull on the legs
- Support the baby's legs
- Allow baby to be delivered with contractions
- Be sure and continue to support baby
- As the head passes the pubis, apply gentle upward traction until the mouth appears
- **If the head does not deliver, place a gloved hand into the vagina with palm towards the infant's face**
- Form a "V" with the index and middle finger on either side of the infant's nose
- Push the vaginal wall away from the infant's face to allow unrestricted respiration
- Continue to support throughout transport
- Notify the receiving hospital emergency room A.S.A.P.



**Breech presentations**

#### 4. Prolapsed Cord

A prolapsed cord occurs when the umbilical cord falls down into the pelvis and is compressed between the fetus and the bony pelvis, shutting off fetal circulation. This tends to happen most frequently in abnormal presentations, with multi or premature births, or in conjunction with premature rupture of the membranes. It is a serious emergency, and fetal death will result quickly without rapid intervention. If the umbilical cord is seen in the vagina, initiate the following procedures:



##### **Treatment plan:**

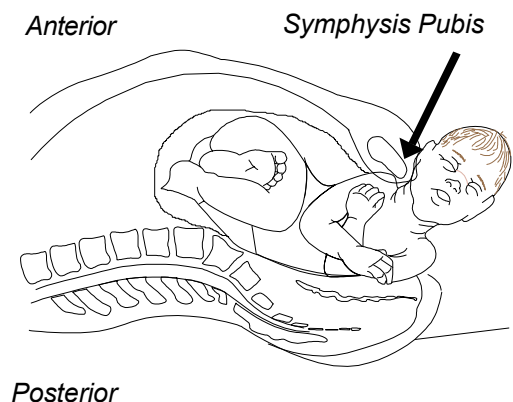
- Request medics
- Insert two fingers into the vagina
- Raise the presenting part of the fetus off the umbilical cord
- Check the umbilical cord for pulsations
- Place the mother in the knee-chest position
- Administer oxygen therapy according to patient's needs
- Transport immediately to nearest hospital emergency room
- Continue holding the presenting part of the baby off the umbilical cord
- Apply moistened dressing to the exposed umbilical cord
- Do not push the umbilical cord back into the vagina
- Notify the receiving hospital emergency room A.S.A.P.

#### 5. Shoulder Dystocia

A shoulder dystocia occurs when the infant's shoulders are larger than its head. This happens most commonly with diabetic and obese mothers. In shoulder dystocia, labor progresses normally and the head is delivered routinely. However, immediately after the head is delivered, it retracts back into the perineum because the shoulders are trapped between the symphysis pubis and the sacrum. In cases of shoulder dystocia, initiate the following procedures:

##### **Treatment plan:**

- Request medics
- Do not pull on the baby's head
- Administer oxygen therapy according to patient's needs
- Flex thighs upward to facilitate delivery
- Apply firm pressure with your open hand above her symphysis pubis
- Notify the receiving hospital ER



**6. Post Partum Hemorrhage**

Post partum hemorrhage is the number one cause of death in pregnant women. It is the loss of 500 mL or more of blood in the first 24 hours following delivery. It occurs in approximately five percent of deliveries. The most common cause of post partum hemorrhage is uterine atony (lack of uterine muscle). This tends to happen most frequently in the multigravida and is most common following multi births or births of large infants. Uterine atony also occurs after precipitous deliveries and prolonged labors. In addition to uterine atony, placenta previa, abruptio placenta, and retained placenta parts, clotting disorders in the mother, and vaginal and cervical tears can cause post partum hemorrhage. Management of post partum hemorrhage includes:

***Treatment plan:***

- Request medics
- Administer oxygen therapy according to patient's needs
- Begin fundal massage
- Do not force delivery of placenta
- Do not pack vagina with dressings
- Keep patient warm
- Inform receiving hospital emergency room A.S.A.P.

<b><i>Student Notes</i></b>	<b><i>Instructor Ideas</i></b>

## **APPENDIX A**

### **Transport Decisions**

#### **1. Leave at scene**

Minor illness of early pregnancy with little or no potential for patient to worsen  
Delivery at home with midwife in attendance and patient agrees to no transport  
BLS Indicators  
EMT feels confident that patient is responsible for self-care, or that another responsible party is present  
EMT urges patient to call back if further concerns or problems  
EMT reminds patient to follow up with private MD if appropriate  
Patient refusal signed ONLY if a) EMT believes patient SHOULD go to medical facility and b) patient refuses treatment/transportation

#### **2. Patient's Own Vehicle (POV)**

Minor illness of early pregnancy with little or no potential for patient to worsen  
BLS Indicators with further evaluation or treatment needed  
Responsible transportation is available

#### **3. BLS Aid Car/Private Ambulance**

BLS Indicators  
Continued BLS assessment or treatment needed en route  
No other responsible transport available  
Patient requires stretcher for transport

#### **4. ALS**

ALS Indicators  
Continued ALS assessment or treatment needed during transport



## **Destination Decisions**

### **1. Self-care**

Minor illness of early pregnancy with little or no potential for patient to worsen

Delivery at home with midwife in attendance and patient agrees to home care

BLS Indicators

EMT feels confident that patient is responsible for self-care, or that another responsible party is present

EMT urges patient to call back if further concerns or problems

EMT reminds patient to follow up with private MD if appropriate

Patient refusal signed ONLY if (a) EMT believes patient SHOULD go to medical facility and (b) patient refuses treatment/transportation

### **2. Clinic or Doctor's office**

Minor illness of early pregnancy with little or no immediate potential for patient's condition to worsen

BLS Indicators

Need for further evaluation and treatment

Facility is available and capable of assessing and treating patient

Facility agrees to see patient

Patient has transportation to and from the facility considered Hospital Emergency Room

Major or minor illness with need for further medical evaluation and treatment

ALS or BLS indicators

No other facility appropriate or available to see patient

Consider specific facilities for specific conditions (e.g. pre-natal care clinic for complicated pregnancies)

### **3. Hospital Emergency Room**

Major or minor illness with need for further medical evaluation

ALS or BLS indicators

No other facility appropriate or available to see patient

Consider specific facilities for specific conditions (e.g. pre-natal care clinic for complicated pregnancies)

# Learning References and Resources

AAOS Emergency Care and Transportation of the Sick and Injured (7th Edition)

KCEMS BLS Patient Care Guidelines

Neonatal Resuscitation (American Academy of Pediatrics, American Heart Association)

<i><b>Student Notes</b></i>	<i><b>Instructor Ideas</b></i>

